

Please type a plus sign (+) inside this box



HDP/SB/21 based on PTO/SB/21 (08-00)

## TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

|                        |                      |
|------------------------|----------------------|
| Application Number     | 10/619,046           |
| Filing Date            | July 14, 2003        |
| Inventor(s)            | Seung-Jae HAN et al. |
| Group Art Unit         | 2617                 |
| Examiner Name          | Khai Minh Nguyen     |
| Attorney Docket Number | 129250-002171/US     |

### ENCLOSURES (check all that apply)

|  |  |  |
|--|--|--|
| <input checked="" type="checkbox"/> Fee Transmittal Form                     | <input type="checkbox"/> Assignment Papers<br>(for an Application)                                 | <input type="checkbox"/> After Allowance Communication to Group  |
| <input checked="" type="checkbox"/> Fee Attached                             | <input type="checkbox"/> Letter to the Official Draftsperson and _____ Sheets of Formal Drawing(s) | <input type="checkbox"/> LETTER SUBMITTING APPEAL BRIEF AND APPEAL BRIEF (w/clean version of pending claims) |
| <input type="checkbox"/> Amendment   | <input type="checkbox"/> Licensing-related Papers  | <input checked="" type="checkbox"/> Appeal Communication to Group<br>(Notice of Appeal, Brief, Reply Brief)  |
| <input type="checkbox"/> After Final   | <input type="checkbox"/> Petition  | <input type="checkbox"/> Proprietary Information   |
| <input type="checkbox"/> Affidavits/declaration(s)                           | <input type="checkbox"/> Petition to Convert to a Provisional Application                          | <input type="checkbox"/> Status Letter   |
| <input type="checkbox"/> Extension of Time Request                           | <input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address            | <input checked="" type="checkbox"/> Other Enclosure(s)<br>(please identify below): Check# 1269 for \$500     |
| <input type="checkbox"/> Express Abandonment Request                         | <input type="checkbox"/> Terminal Disclaimer   |  |
| <input type="checkbox"/> Information Disclosure Statement                    | <input type="checkbox"/> Request for Refund  |  |
| <input type="checkbox"/> Certified Copy of Priority Document(s)              | <input type="checkbox"/> CD, Number of CD(s) _____   |  |
| <input type="checkbox"/> Response to Missing Parts/ Incomplete Application   |  |  |
| <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53 |  |  |
|  | Remarks  |  |

### SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

|                               |  |                                 |                    |
|-------------------------------|--|---------------------------------|--------------------|
| Firm<br>or<br>Individual name | CAPITOL PATENT &<br>TRADEMARK LAW FIRM, PLLC | Attorney Name<br>John E. Curtin | Reg. No.<br>37,602 |
| Signature                     |  |                                 |                    |
| Date                          | March 5, 2007                                |                                 |                    |

*EEW  
AFS*

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

# FEE TRANSMITTAL for FY 2007

Effective 10/01/2004. Patent fees are subject to annual revision.

 Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ 500.00)

| Complete if Known    |                  |
|----------------------|------------------|
| Application Number   | 10/619,046       |
| Filing Date          | July 14, 2003    |
| First Named Inventor | S.J. Han         |
| Examiner Name        | K. M. Nguyen     |
| Art Unit             | 2617             |
| Attorney Docket No.  | 129250-002171/US |

O I P E  
MAR 05 2007  
PATENT & TRADEMARK OFFICE

## METHOD OF PAYMENT (check all that apply)

Check  Credit card  Money  Other  None  
Order

 Deposit Account:

Deposit Account Number 50-3777

Deposit Account Name CAPITOL PATENT & TRADEMARK LAW FIRM, PLLC

## The Director is authorized to: (check all that apply)

Charge fee(s) indicated below  Credit any overpayments  
 Charge any additional fee(s) during the pendency of this application  
 Charge fee(s) indicated below, except for the filing fee  
 to the above-identified deposit account.

## FEE CALCULATION

## 1. BASIC FILING FEE

| Large Entity | Small Entity |
|--------------|--------------|
|--------------|--------------|

| Fee Code | Fee (\$) | Fee Code | Fee (\$) | Fee Description        | Fee Paid |
|----------|----------|----------|----------|------------------------|----------|
| 1011     | 300      | 2011     | 150      | Utility filing fee     |          |
| 1012     | 200      | 2012     | 100      | Design filing fee      |          |
| 1013     | 200      | 2013     | 100      | Plant filing fee       |          |
| 1014     | 300      | 2014     | 150      | Reissue filing fee     |          |
| 1005     | 200      | 2005     | 100      | Provisional filing fee |          |

SUBTOTAL (1)

(\$ 0)

## 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

|                    |  | Extra Claims | Fee from below     | Fee Paid |
|--------------------|--|--------------|--------------------|----------|
| Total Claims       |  | -20 **       | = 8 prev. paid for | X = 0    |
| Independent Claims |  | -3 **        | = 4 prev. paid for | X = 0    |
| Multiple Dependent |  |              |                    |          |

| Large Entity | Small Entity |
|--------------|--------------|
|--------------|--------------|

| Fee Code | Fee (\$) | Fee Code | Fee (\$) | Fee Description  |
|----------|----------|----------|----------|--|
| 1202     | 50       | 2202     | 25       | Claims in excess of 20                                     |
| 1201     | 200      | 2201     | 100      | Independent claims in excess of 3                          |
| 1203     | 360      | 2203     | 180      | Multiple dependent claim, if not paid                      |
| 1204     | 200      | 2204     | 100      | ** Reissue independent claims over original patent         |
| 1205     | 50       | 2205     | 25       | ** Reissue claims in excess of 20 and over original patent |

SUBTOTAL (2)

(\$ 0)

## FEE CALCULATION (continued)

## 3. ADDITIONAL FEES

| Large Entity | Small Entity |
|--------------|--------------|
|--------------|--------------|

| Fee Code | Fee (\$) | Fee Code | Fee (\$) | Fee Description  | Fee Paid |
|----------|----------|----------|----------|--|----------|
| 1051     | 130      | 2051     | 65       | Surcharge - late filing fee or oath  |          |
| 1052     | 50       | 2052     | 25       | Surcharge - late provisional filing fee or cover sheet                     |          |
| 1053     | 130      | 1053     | 130      | Non-English specification  |          |
| 1812     | 2,520    | 1812     | 2,520    | For filing a request for reexamination                                     |          |
| 1804     | 920*     | 1804     | 920*     | Requesting publication of SIR prior to Examiner action                     |          |
| 1805     | 1,840*   | 1805     | 1,840*   | Requesting publication of SIR after Examiner action                        |          |
| 1251     | 120      | 2251     | 60       | Extension for reply within first month                                     |          |
| 1252     | 450      | 2252     | 225      | Extension for reply within second month                                    |          |
| 1253     | 1020     | 2253     | 510      | Extension for reply within third month                                     |          |
| 1254     | 1,590    | 2254     | 795      | Extension for reply within fourth month                                    |          |
| 1255     | 2,160    | 2255     | 1080     | Extension for reply within fifth month                                     |          |
| 1401     | 500      | 2401     | 250      | Notice of Appeal   | 500      |
| 1402     | 500      | 2402     | 250      | Filing a brief in support of an appeal                                     |          |
| 1403     | 1000     | 2403     | 500      | Request for oral hearing   |          |
| 1452     | 500      | 2452     | 250      | Petition to revive - unavoidable   |          |
| 1453     | 1500     | 2453     | 750      | Petition to revive - unintentional   |          |
| 1501     | 1400     | 2501     | 700      | Utility issue fee (or reissue)   |          |
| 1502     | 800      | 2502     | 400      | Design issue fee   |          |
| 1460     | 130      | 1460     | 130      | Petitions to the Commissioner  |          |
| 1807     | 50       | 1807     | 50       | Processing fee under 37 CFR 1.17 (q)                                       |          |
| 1806     | 180      | 1806     | 180      | Submission of Information Disclosure Stmt                                  |          |
| 8021     | 40       | 8021     | 40       | Recording each patent assignment per property (times number of properties) |          |
| 1809     | 790      | 2809     | 395      | Filing a submission after final rejection (37 CFR § 1.129(a))              |          |
| 1810     | 790      | 2810     | 395      | For each additional invention to be examined (37 CFR § 1.129(b))           |          |
| 1801     | 790      | 2801     | 395      | Request for Continued Examination (RCE)                                    |          |

Other fee (specify) \_\_\_\_\_

\*Reduced by Basic Filing Fee Paid SUBTOTAL (3) (\$500)

## 4. SEARCH/EXAMINATION FEES

|      |     |      |     |                         |  |
|------|-----|------|-----|-------------------------|--|
| 1111 | 500 | 2111 | 250 | Utility Search Fee      |  |
| 1112 | 100 | 2112 | 50  | Design Search Fee       |  |
| 1113 | 300 | 2113 | 150 | Plant Search Fee        |  |
| 1114 | 500 | 2114 | 250 | Reissue Search Fee      |  |
| 1311 | 200 | 2311 | 100 | Utility Examination Fee |  |
| 1312 | 130 | 2312 | 65  | Design Examination Fee  |  |
| 1313 | 160 | 2313 | 80  | Plant Examination Fee   |  |
| 1314 | 600 | 2314 | 300 | Reissue Examination Fee |  |

SUBTOTAL (4) (\$0)

## SUBMITTED BY

Complete (if applicable)

|                   |                |                                   |        |           |                |
|-------------------|----------------|-----------------------------------|--------|-----------|----------------|
| Name (Print/Type) | John E. Curtin | Registration No. (Attorney/Agent) | 37,602 | Telephone | (703) 266-3330 |
| Signature         |                |                                   |        | Date      | March 5, 2007  |

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.



**IN THE U.S. PATENT AND TRADEMARK OFFICE**

Appellants: Seung-Jae Han et al.

Application No.: 10/619,046

Art Unit: 2617

Filed: July 14, 2003

Examiner: Khai Minh Nguyen

For: METHODS AND APPARATUSES FOR  
ADAPTIVE AND ONLINE ASSIGNMENT IN  
HIERARCHICAL OVERLAY NETWORKS

Attorney Docket No.: 129250-002171/US

---

**APPELLANTS' BRIEF ON APPEAL**

**MAIL STOP APPEAL BRIEF - PATENTS**

Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

March 5, 2007

03/06/2007 JADDO1 00000001 10619046

01 FC:1402

500.00 0P



APPELLANTS' BRIEF ON APPEAL  
U.S. Application No.: 10/619,046  
Atty. Docket: 129250-002171/US

## **TABLE OF CONTENTS**

|  | <u>Page</u> |
|--|-------------|
| APPELLANTS' BRIEF ON APPEAL .....                                      | 1           |
| I. REAL PARTY IN INTEREST .....  | 1           |
| II. RELATED APPEALS AND INTERFERENCES.....                             | 1           |
| III. STATUS OF CLAIMS .....  | 1           |
| IV. STATUS OF AMENDMENTS .....   | 1           |
| V. SUMMARY OF CLAIMED SUBJECT MATTER.....                              | 2           |
| (i). Overview of the Subject Matter of the Independent Claims.....     | 2           |
| (ii). The Remainder of the Specification Also Supports the Claims..... | 3           |
| VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL.....                 | 3           |
| VII. ARGUMENTS.....  | 4           |
| The Section 103 Rejections .....                                       | 4           |
| VIII. CLAIMS APPENDIX.....   | 7           |
| IX. EVIDENCE APPENDIX.....   | 15          |
| X. RELATED PROCEEDING APPENDIX.....                                    | 15          |

APPELLANTS' BRIEF ON APPEAL  
U.S. Application No.: 10/619,046  
Atty. Docket: 129250-002171/US



### **APPELLANTS' BRIEF ON APPEAL**

#### **I. REAL PARTY IN INTEREST:**

The real party in interest in this appeal is Lucent Technologies Inc. Assignment of the application was submitted to the U.S. Patent and Trademark Office and recorded at Reel 014299, Frame 0536.

#### **II. RELATED APPEALS AND INTERFERENCES:**

There are no known appeals or interferences that will affect, be directly affected by, or have a bearing on the Board's decision in this Appeal.

#### **III. STATUS OF CLAIMS:**

Claims 1-36 are pending in the application, with claims 1, 12, and 23 written in independent form.

Claims 1-3, 5, 7, 8, 11-14, 16, 18, 19, 22-27, 29, 31, 35 and 36 remain finally rejected under 35 U.S.C. §103(a) while the other remaining claims have been objected to by the Examiner. Claims 1-36 are being appealed.

#### **IV. STATUS OF AMENDMENTS:**

A Request for Reconsideration ("Request") was filed on December 1, 2006. In an Advisory Action dated January 4, 2007 ("Advisory Action"), the Examiner stated that the Request was considered but did not place the application in condition for allowance.

**V. SUMMARY OF CLAIMED SUBJECT MATTER:**

**(i). Overview of the Subject Matter of the Independent Claims**

The present invention is directed at the assignment of mobile devices to micro- and macro-cells based on an adjustable threshold that is in turn based on performance characteristics of the two cell types. More specifically, independent claim 1 reads as follows (specification citations follow in parenthesis):

**1. A method for calculating a transmission characteristic threshold for use in assigning a user to one layer in a plurality of layers in a wireless communications network, said method comprising:**

**calculating a first balancing metric based on an operating characteristic of said first layer;**

**calculating a second balancing metric based on an operating characteristic of said second layer; and**

**adjusting said transmission characteristic threshold in response to the value of said first balancing metric relative to said second balancing metric.**

(see specification, page 5, line 25 to page 19, last line, for example)

Independent claim 12 reads as follows:

**12. Apparatus for calculating a transmission characteristic threshold for use in assigning a user to one layer in a plurality of layers in a wireless communications network, said apparatus comprising:**

**means for calculating a first balancing metric based on an operating characteristic of said first layer;**

**means for calculating a second balancing metric based on an operating characteristic of said second layer; and**

**means for adjusting said transmission characteristic threshold in response to the value of said first balancing metric relative to said second balancing metric.**

(see specification, page 5, line 25 to page 19, last line, for example)

Independent claim 23 reads as follows:

**23. An assignment manager for assigning a user to one layer in a plurality of layers in a wireless communications network, said assignment manager comprising:**

**a first circuit for calculating a first balancing metric based on an operating characteristic of said first layer;**

**a second circuit for calculating a second balancing metric based on an operating characteristic of said second layer; and**

**a third circuit for adjusting a transmission characteristic threshold in response to the value of said first balancing metric relative to said second balancing metric.**

(see specification, page 5, line 25 to page 19, last line, for example)

In order to make the overview set forth above concise the disclosure that has been included, or referred to, above only represents a portion of the total disclosure set forth in the Specification that supports the independent claims.

**(ii). The Remainder of the Specification Also Supports the Claims**

The Appellants note that there may be additional disclosure in the Specification that also supports the independent and dependent claims. Further, by referring to the disclosure above the Appellants do not represent that this is the only evidence that supports the independent claims nor do Appellants necessarily represent that this disclosure can be used to fully interpret the claims of the present invention. Instead, this disclosure is an overview of the claimed subject matter.

**VI. GROUNDΣ OF REJECTION TO BE REVIEWED ON APPEAL:**

Appellants seek the Board's review and reversal of the rejection of claims 1-3, 5, 7, 8, 11-14, 16, 18, 19, 22-27, 29, 31, 35 and 36 (and the objected to claims as well) under 35 U.S.C. §103(a) based on U.S. Patent No. 4,670,899 to Brody et al ("Brody") in view of U.S. Patent No. 6,792,275 to Lo et al ("Lo").

**VII. ARGUMENTS:**

**The §103 Rejections**

Claims 1-3, 5, 7, 8, 11-14, 16, 18, 19, 22-27, 29, 31, 32, 35 and 36 were rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Brody and Lo. The Appellants respectfully disagree for at least the following reasons.

In the Final Office Action the Examiner takes the position that Brody discloses the claimed steps of: (a) calculating a first balancing metric based on an operating characteristic of said first layer, and (b) calculating a second balancing metric based on an operating characteristic of said second layer; but does not disclose the claimed step of (c) adjusting said transmission characteristic threshold in response to the value of said first balancing metric relative to said second balancing metric.

To make up for this deficiency in Brody the Examiner relies on Lo.

The Appellants respectfully disagree. Initially the Appellants note that, contrary to the Examiner's position, Brody does not disclose at least steps (b) and (c) while Lo does not disclose at least step (c).

In more detail it appears that the Examiner is interpreting each of Brody's cells as separate layers. In the Office Action the Examiner states that "each... cell site base station defines a geographical cell (layer)" (parenthesis in original; page 2 of Office Action). This is a position that the Examiner repeats in the Advisory Action as well (see continuation sheet; "...(a network can have more than one base stations [sic], and each or [sic] the cell site base stations defines a geographical cell (layer))..."). Notable, however, is the fact that Brody does not describe its cells as layers; this is the Examiner's interpretation.

The Appellants respectfully submit that one of ordinary skill in the art, upon reading Brody's disclosure, would not interpret each of Brody's individual cells as a "layer" as the Examiner has done. To the contrary, one of ordinary skill would understand that the cells referred to in Brody (e.g., C8 and C9) are in the

APPELLANTS' BRIEF ON APPEAL  
U.S. Application No.: 10/619,046  
Atty. Docket: 129250-002171/US

same layer. Thus, Brody does not disclose nor suggest step (b). Because of this, as the Examiner acknowledges, Brody cannot adjust a transmission characteristic threshold in response to the value of a first layer's balancing metric relative to a second layer's balancing metric (i.e., step (c)) because Brody's values/thresholds relate only to the same layer.

Turning now to Lo, contrary to the Examiner's statement in the Final Office Action (maintained in the Advisory Action) Lo does not disclose the adjustment of a transmission characteristic threshold "in response to the value of [a] first balancing metric relative to [a] second balancing metric". Instead, Lo adjusts its macro- and micro-cell performance thresholds based on a "Sugeno displacement gradient" (column 4, lines 25-35). As far as Appellants can determine a Sugeno displacement gradient is specific to "fuzzy logic" approximation techniques that do not involve the adjustment of a threshold upon comparison of two different balancing metrics, i.e., step (c).

Appellants note that in the Advisory Action and Final Office Action the Examiner does not appear to have addressed the position set forth above with respect to Lo; a position that the Appellants presented in their previous responses.

Because the combination of Brody and Lo does not disclose or suggest steps (b) and (c) set forth above, the Appellants respectfully submit that the subject matter of claims 1-3, 5, 7, 8, 11-14, 16, 18, 19, 22-27, 29, 31, 32, 35 and 36 would not have been obvious to one of ordinary skill in the art at the time the present application was filed based on reading the disclosures of Brody and Lo.

APPELLANTS' BRIEF ON APPEAL  
U.S. Application No.: 10/619,046  
Atty. Docket: 129250-002171/US

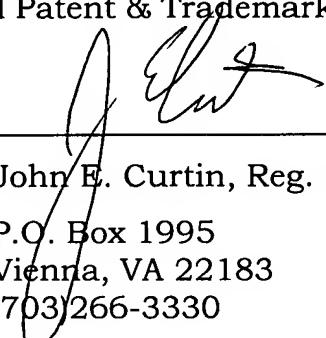
**Conclusion:**

Appellants respectfully request that members of the Board reverse the decision of the Examiner and allow claims 1-36.

The Commissioner is authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 50-3777 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

Capitol Patent & Trademark Law Firm, PLLC

By: 

John E. Curtin, Reg. No. 37,602

P.O. Box 1995  
Vienna, VA 22183  
(703)266-3330

**VIII. CLAIMS APPENDIX**

1. (Original) A method for calculating a transmission characteristic threshold for use in assigning a user to one layer in a plurality of layers in a wireless communications network, said method comprising:

calculating a first balancing metric based on an operating characteristic of said first layer;

calculating a second balancing metric based on an operating characteristic of said second layer; and

adjusting said transmission characteristic threshold in response to the value of said first balancing metric relative to said second balancing metric.

2. (Original) The method of claim 1 further comprising the step of assigning said user to a layer in response to the value of a first user transmission characteristic of a transmission from said user relative to said adjusted transmission characteristic threshold.

3. (Original) The method of claim 1, wherein said transmission characteristic threshold is a threshold corresponding to the size of the data to be transmitted to or from said user.

4. (Original) The method of claim 3 wherein said threshold is adjusted according to the equation:

$$D_0[k] = \min \left\{ \max \left\{ D_{\min}, D_0[k-1] - \frac{\beta_d}{k^{\gamma_d}} \Delta[k] \right\}, D_{\max} \right\}$$

where  $D_0[k]$  is an optimal data size threshold at the  $k$ -th update interval of said threshold;  $\beta_d$  is an update magnitude parameter;  $\gamma_d$  is a time discounting factor;  $D_0[k-1]$  is a data size threshold used at the  $k-1$  update interval;  $\Delta[k]$  is a weighted moving average of previous values of a difference in said balancing metric between

APPELLANTS' BRIEF ON APPEAL  
U.S. Application No.: 10/619,046  
Atty. Docket: 129250-002171/US

the macro-cell layer and the micro-cell layer;  $D_{\min}$  is the minimum data amount to be transmitted by any user in the user population; and  $D_{\max}$  is a maximum possible data size corresponding to said user.

5. (Original) The method of claim 1 wherein said transmission characteristic threshold is a threshold corresponding to the velocity of said user.

6. (Original) The method of claim 5 wherein said threshold is adjusted according to the equation:

$$V_o[k] = \min \left\{ \max \left\{ V_{\min}, V_o[k-1] + \frac{\beta_v}{k^{\gamma_v}} \Delta[k] \right\}, V_{\max} \right\}$$

where  $V_o[k]$  is an optimal velocity threshold at the  $k$ -th update interval of said threshold;  $\beta_v$  is an update magnitude parameter;  $\gamma_v$  is a time discounting factor;  $V_o[k-1]$  is a velocity threshold used at the  $k-1$  update interval;  $\Delta[k]$  is a weighted moving average of previous values of a difference in said balancing metric between the macro-cell layer and the micro-cell layer;  $V_{\min}$  is the minimum velocity of any user in the user population; and  $V_{\max}$  is the maximum velocity corresponding to said user.

7. (Original) The method of claim 1 wherein said first operating characteristic corresponds to an average number of users.

8. (Original) The method of claim 1 wherein said first operating characteristic corresponds to the expected system load as seen by said user.

APPELLANTS' BRIEF ON APPEAL  
U.S. Application No.: 10/619,046  
Atty. Docket: 129250-002171/US

9. (Original) The method of claim 7 wherein said first balancing metric is determined by the expression  $X_m = \frac{C_m - \lambda_m \bar{D}_m}{\sqrt{C_m}}$  and said second balancing metric is determined by the expression  $X_\mu = \frac{C_\mu - \lambda_\mu \bar{D}_\mu}{\sqrt{C_\mu}}$ .

10. (Original) The method of claim 8 wherein said first balancing metric is determined by the expression  $X_m = \frac{\lambda_m \bar{D}_m}{C_m - \lambda_m \bar{D}_m}$  and the second balancing metric is determined by the expression  $X_\mu = \frac{\lambda_\mu \bar{D}_\mu}{C_\mu - \lambda_\mu \bar{D}_\mu}$ .

11. (Original) The method of claim 8 wherein said first balancing metric is determined by calculating the number of users in the first layer of said network and said second balancing metric is determined by calculating the number of users in said second layer of said network.

12. (Original) Apparatus for calculating a transmission characteristic threshold for use in assigning a user to one layer in a plurality of layers in a wireless communications network, said apparatus comprising:

means for calculating a first balancing metric based on an operating characteristic of said first layer;

means for calculating a second balancing metric based on an operating characteristic of said second layer; and

means for adjusting said transmission characteristic threshold in response to the value of said first balancing metric relative to said second balancing metric.

APPELLANTS' BRIEF ON APPEAL  
U.S. Application No.: 10/619,046  
Atty. Docket: 129250-002171/US

13. (Original) The apparatus of claim 12 further comprising means for assigning said user to a layer in response to the value of a first user transmission characteristic of a transmission from said user relative to said adjusted transmission characteristic threshold.

14. (Original) The apparatus of claim 12, wherein said transmission characteristic threshold is a threshold corresponding to the size of the data to be transmitted to or from said user.

15. (Original) The apparatus of claim 14 wherein said threshold is adjusted according to the equation:

$$D_0[k] = \min \left\{ \max \left\{ D_{\min}, D_0[k-1] - \frac{\beta_d}{k^{\gamma_d}} \Delta[k] \right\}, D_{\max} \right\}$$

where  $D_0[k]$  is an optimal data size threshold at the  $k$ -th update interval of said threshold;  $\beta_d$  is an update magnitude parameter;  $\gamma_d$  is a time discounting factor;  $D_0[k-1]$  is a data size threshold used at the  $k-1$  update interval;  $\Delta[k]$  is a weighted moving average of previous values of a difference in said balancing metric between the macro-cell layer and the micro-cell layer;  $D_{\min}$  is the minimum data amount to be transmitted by any user in the user population; and  $D_{\max}$  is a maximum possible data size corresponding to said user.

16. (Original) The apparatus of claim 12 wherein said transmission characteristic threshold is a threshold corresponding to the velocity of said user.

APPELLANTS' BRIEF ON APPEAL  
U.S. Application No.: 10/619,046  
Atty. Docket: 129250-002171/US

17. (Original) The apparatus of claim 16 wherein said threshold is adjusted according to the equation:

$$V_o[k] = \min \left\{ \max \left\{ V_{\min}, V_o[k-1] + \frac{\beta_v}{k^{\gamma_v}} \Delta[k] \right\}, V_{\max} \right\}$$

where  $V_o[k]$  is an optimal velocity threshold at the k-th update interval of said threshold;  $\beta_v$  is an update magnitude parameter;  $\gamma_v$  is a time discounting factor;  $V_o[k-1]$  is a velocity threshold used at the k-1 update interval;  $\Delta[k]$  is a weighted moving average of previous values of a difference in said balancing metric between the macro-cell layer and the micro-cell layer;  $V_{\min}$  is the minimum velocity of any user in the user population; and  $V_{\max}$  is the maximum velocity corresponding to said user.

18. (Original) The apparatus of claim 12 wherein said first operating characteristic corresponds to an average number of users.

19. (Original) The apparatus of claim 12 wherein said first operating characteristic corresponds to the expected system load as seen by said user.

20. (Original) The apparatus of claim 18 wherein said first balancing metric is determined by the expression  $X_m = \frac{C_m - \lambda_m \bar{D}_m}{\sqrt{C_m}}$  and said second balancing metric is determined by the expression  $X_\mu = \frac{C_\mu - \lambda_\mu \bar{D}_\mu}{\sqrt{C_\mu}}$ .

21. (Original) The apparatus of claim 18 wherein said first balancing metric is determined by the expression  $X_m = \frac{\lambda_m \bar{D}_m}{C_m - \lambda_m \bar{D}_m}$  and the second balancing metric is determined by the expression  $X_\mu = \frac{\lambda_\mu \bar{D}_\mu}{C_\mu - \lambda_\mu \bar{D}_\mu}$ .

22. (Original) The apparatus of claim 18 wherein said first balancing metric is determined by calculating the number of users in the first layer of said network and said second balancing metric is determined by calculating the number of users in said second layer of said network.

23. (Original) An assignment manager for assigning a user to one layer in a plurality of layers in a wireless communications network, said assignment manager comprising:

a first circuit for calculating a first balancing metric based on an operating characteristic of said first layer;

a second circuit for calculating a second balancing metric based on an operating characteristic of said second layer; and

a third circuit for adjusting a transmission characteristic threshold in response to the value of said first balancing metric relative to said second balancing metric.

24. (Original) The assignment manager of claim 23 wherein said first circuit, said second circuit, said third circuit and said fourth circuit are the same circuit.

25. (Original) The assignment manager of claim 23 further comprising a fourth circuit for assigning said user to a layer in response to the value of a first user transmission characteristic of a transmission from said user relative to said adjusted transmission characteristic threshold.

26. (Original) The assignment manager of claim 23 wherein said first circuit, said second circuit, said third circuit and said fourth circuit are the same circuit.

APPELLANTS' BRIEF ON APPEAL  
U.S. Application No.: 10/619,046  
Atty. Docket: 129250-002171/US

27. (Original) The method of claim 23, wherein said transmission characteristic threshold is a threshold corresponding to the size of the data to be transmitted to or from said user.

28. (Original) The assignment manager of claim 27 wherein said threshold is adjusted according to the equation:

$$D_0[k] = \min \left\{ \max \left\{ D_{\min}, D_0[k-1] - \frac{\beta_d}{k^{\gamma_d}} \Delta[k] \right\}, D_{\max} \right\}$$

where  $D_0[k]$  is an optimal data size threshold at the k-th update interval of said threshold;  $\beta_d$  is an update magnitude parameter;  $\gamma_d$  is a time discounting factor;  $D_0[k-1]$  is a data size threshold used at the k-1 update interval;  $\Delta[k]$  is a weighted moving average of previous values of a difference in said balancing metric between the macro-cell layer and the micro-cell layer;  $D_{\min}$  is the minimum data amount to be transmitted by any user in the user population; and  $D_{\max}$  is a maximum possible data size corresponding to said user.

29. (Original) The assignment manager of claim 23 wherein said transmission characteristic threshold is a threshold corresponding to the velocity of said user.

30. (Original) The assignment manager of claim 29 wherein said threshold is adjusted according to the equation:

$$V_0[k] = \min \left\{ \max \left\{ V_{\min}, V_0[k-1] + \frac{\beta_v}{k^{\gamma_v}} \Delta[k] \right\}, V_{\max} \right\}$$

where  $V_0[k]$  is an optimal velocity threshold at the k-th update interval of said threshold;  $\beta_v$  is an update magnitude parameter;  $\gamma_v$  is a time discounting factor;  $V_0[k-1]$  is a velocity threshold used at the k-1 update interval;  $\Delta[k]$  is a weighted

APPELLANTS' BRIEF ON APPEAL  
U.S. Application No.: 10/619,046  
Atty. Docket: 129250-002171/US

moving average of previous values of a difference in said balancing metric between the macro-cell layer and the micro-cell layer;  $V_{\min}$  is the minimum velocity of any user in the user population; and  $V_{\max}$  is the maximum velocity corresponding to said user.

31. (Original) The assignment manager of claim 23 wherein said first operating characteristic corresponds to an average number of users.

32. (Original) The assignment manager of claim 23 wherein said first operating characteristic corresponds to the expected system load as seen by said user.

33. (Original) The assignment manager of claim 31 wherein said first balancing metric is determined by the expression  $X_m = \frac{C_m - \lambda_m \bar{D}_m}{\sqrt{C_m}}$  and said second balancing metric is determined by the expression  $X_\mu = \frac{C_\mu - \lambda_\mu \bar{D}_\mu}{\sqrt{C_\mu}}$ .

34. (Original) The assignment manager of claim 32 wherein said first balancing metric is determined by the expression  $X_m = \frac{\lambda_m \bar{D}_m}{C_m - \lambda_m \bar{D}_m}$  and the second balancing metric is determined by the expression  $X_\mu = \frac{\lambda_\mu \bar{D}_\mu}{C_\mu - \lambda_\mu \bar{D}_\mu}$ .

35. (Original) The assignment manager of claim 32 wherein said first balancing metric is determined by calculating the number of users in the first layer of said network and said second balancing metric is determined by calculating the number of users in said second layer of said network.

APPELLANTS' BRIEF ON APPEAL  
U.S. Application No.: 10/619,046  
Atty. Docket: 129250-002171/US

36. (Original) The assignment manager of claim 23 wherein said first circuit, said second circuit, said third circuit and said fourth circuit are the same circuit.

**IX. EVIDENCE APPENDIX**

None.

**X. RELATED PROCEEDINGS APPENDIX**

None.